

SOME BIRDS OF LYALLPUR AND THEIR FOOD.

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INTRODUCTION.

A number of contributions on the bird fauna of North West India have appeared from time to time in the *Journal of the Bombay Natural History Society*. Rattray (1905) and Magrath (1909) gave an account of the birds of Murree and the Gullis. Curree (1915) studied the birds of Lahore and its vicinity. Hugh Whistler (1915, 1917, 1920, 1927, 1928) investigated the avian fauna of the Dalhousie hills, Gujranwala, Ambala, Ludhiana, Fagoo (near Simla), Simla and Kulu. Jones (1920, 1921, 1927) worked on the birds of Simla, Campbellpore-Attock and Ambala. Hingston (1921) devoted his attention to the birds of Delhi. Briggs and Osmaston (1928) interested themselves in the bird fauna of Peshawar.

The recently-opened-up canal colonies have so far remained unrepresented and this opportunity is taken to place on record information regarding the birds of Lyallpur.

As friends and foes of the farmer the birds are second in importance only to the insects, and, therefore, for an agricultural country the study of the bird fauna is of paramount importance. A study of the food habits of the birds commonly found in gardens and fields at Lyallpur was taken in hand in 1926, and an area within ten miles radius of the Punjab Agricultural College, Lyallpur, has been surveyed.

It is generally recognized that the capacity for damage or good depends, largely, on the number of individuals. Every grain- or fruit-feeding species is a potential foe and every insect feeder a potential friend, but as long as the number of individuals is small the value of a particular species is insignificant. Thus it is not always possible to assign a definite status to a species.

The study of the bird fauna of Lyallpur is of added interest when one recollects, that not long ago this tract was almost barren and a most inhospitable spot. Here nothing but *Prosopis spicigera*, *Salvadora oleoides*, *Capparis aphylla*, *Tamarix articulata* grew in any abundance, *Zizyphus jujuba*, *Zizyphus numularia*, were less common, and *Acacia arabica* and *Dalbergia sissu* were rarities. Grasses which grew after scanty rains provided grazing for numerous herds of cattle. Cultivation was unknown over this vast arid tract. During the last 40 years, thanks to the canals, the entire

character of the locality—climatic, floral and faunal—has changed and Lyallpur has become one of the greenest parts of the Punjab, where innumerable trees provide roosting places, and different crops and fruit trees provide sufficient food for different species and enormous flocks of birds. The introduction of different types of plants as crops and fruit, shade and ornamental trees have brought in their particular pests and thus increased the food of the insectivorous birds.

If it were possible to compare the avian fauna of 40 years ago with what it is today, one would get most interesting facts regarding the 'Balance of Life in Nature'. Unfortunately, for want of record, such a comparison is not possible. As a direct result of the colonization of this arid area, undoubtedly, there has occurred an enormous increase in the numbers of such birds as crows, sparrows, parrots and pigeons, which now find abundant food and safe dwellings. This locality is still undergoing changes and a study undertaken after a quarter of a century will perhaps prove very interesting.

It may be stated that in addition to the birds mentioned in this paper, various species of cranes, mallards, ducks, teals and snipes are found in the Lyallpur District at the canal escapes at Chaku, Beranwala, Rodukoru and Bhakat, but as these birds are not of agricultural importance, they have not been studied.

The nomenclature adopted is that of Stuart Baker (*The Fauna of British India*). (F. No.....) indicates number of the species in the *Fauna* Volumes.

Some of the birds collected were identified by the Bombay Natural History Society and the help received is gratefully acknowledged.

BIRDS OF LYALLPUR.

The following is a brief account of the birds found at Lyallpur. Most of these were actually shot and their stomach contents examined.

Family: CORVIDÆ.

(1) **The Punjab Raven.** *Corvus laurencei*, Hume (F. No. 1).

Abundance.—Common in the vicinity of town as well as in the open country; found throughout the year; 19 birds killed during different months of the year.

Food.—Omnivorous: ripening fruits and cereals, seeds and seedlings from the fields; kitchen refuse; animal flesh; eggs and young of birds; insects—locusts, *Chrotogonus* spp., ants, gram caterpillars, cutworms, beetles, etc.

Status.—Of major importance to agriculture: on the whole harmful.

(2) **The Eastern Rook.** *Corvus frugilegus tchusii* Hartert. (F. No. 9).

Abundance.—A winter visitor; not common; 5 birds killed 21-2-1929 (3) and 5-12-1928 (2).

Food.—Wheat and other grains, tender shoots of gram, other vegetable matter; insects—ants, gram caterpillars, cutworms, beetles, etc.

Status.—Of minor importance to agriculture.

(3) **The Common Indian House-Crow.** *Corvus splendens splendens* Vieill. (F. No. 11).

Abundance.—Found in myriads throughout the year; numerous tall trees provide suitable roosts. In winter (October to March) they leave their roosting places every morning in huge flocks going towards different directions and return in the evening. Killed every week throughout the year 1928-29.

Food.—Omnivorous: all kinds of ripening crops and fruits, seeds and seedlings, kitchen refuse, vegetables; lizards, eggs and nestling of birds; animal flesh; and insects—*Chrotogonus* spp., locust adults and hoppers, black ants, winged white ants, caterpillars, beetles and beetle grubs, etc.

Examination of Stomach Contents.—Cropseeds 44.13 per cent, weedseeds 2.38 per cent, vegetables 7.33 per cent, cultivated fruits 6.46 per cent, wild fruits 5.39 per cent, animal flesh etc. 8.34 per cent, injurious insects 16.15 per cent, miscellaneous, bread etc., 9.47 per cent and pebbles 0.05 per cent.

Status.—A very important bird in agriculture: certainly a serious pest in the canal colonies; its total extermination perhaps may not be desirable, but its numbers must be kept down.

(4) **The Indian Tree-pie.** *Dendrocitta rufa rufa* Latham. (F. No. 26).

Abundance.—Not very common; 7 birds killed on 24, 26-4-1930, 30-6-1926, 1-7-1928 (2); 2-8-1928; 21-12-1928.

Food.—Omnivorous: cultivated crops; fruits; lizards, spiders, eggs and nestling of birds; and insects—locust hoppers, caterpillars, beetles, etc.

Family: PARIDÆ.

(5) **The Punjab Grey-Tit.** *Parus major planorum* Hartert (F. No. 54).

Abundance.—A rare bird; only one specimen was killed on 28-11-1929.

Food.—Ants and other hymenopterous insects.

Family: TIMALIIDÆ.

(6) **The Bengal Jungle-Babbler.** *Turdoides terricolor terricolor* Hodgs. (F. No. 183).

Abundance.—Fairly common; present throughout the year, seen hopping about bushes and trunks of trees and overturning leaves in search of insects; 31 birds killed during different months of the year.

Food.—Omnivorous: grains, seeds and seedlings, weedseeds; sometimes fruits; various insects—*Chrotogonus* spp., locust, eggs and hoppers, ants, caterpillars and beetles. Insects form the major portion of its diet.

Status.—Of major importance to agriculture: beneficial.

(7) **The Common Babbler.** *Argya caudata caudata* Dumont. (F. No. 192).

Abundance.—A familiar and common bird, seen throughout the year near bushes and hedges; 17 birds killed during different months of the year.

Food.—Mainly insects—ants, caterpillars, beetles; also grains, seeds and seedlings, and weedseeds.

Status.—Of major importance to agriculture: beneficial.

Family: PYCNOTIDÆ.

(8) **The Punjab Red-vented Bulbul.** *Molpastes hæmorrhous intermedius* Jerdon. (F. No. 404).

Abundance.—Common; generally seen in pairs throughout the year in gardens and cultivated areas; 12 birds killed during different months of the year.

Food.—Omnivorous: grains, figs-fruit, peas; insects—locust adults and hoppers, ants, winged white-ants, caterpillars, moths, beetles, etc.

Status.—Of minor importance to agriculture: on the whole beneficial.

(9) **The White-cheeked Bulbul.** *Molpastes leucogenys leucogenys* Gray. (F. No. 405).

Abundance.—Not so common as the above, one specimen killed on 5-9-1929.

Family: TURDIDÆ

(10) **The Northern Indian Stone-Chat.** *Saxicola caprata bicolor* Sykes. (F. No. 494).

Abundance.—Not very common; only 5 birds killed on 19-3-1928, 7, 26 (2)-8-1929 and 16-9-1928.

Food.—Insects—ants, beetles, etc.

(11) **The Pied Chat.** *Ænanthe picata* Blyth. (F. No. 506).

Abundance.—Not very common, a winter visitor; only 4 birds killed on 27-8-1931, and 3, 9, 12-12-1930.

Food.—Insects, mainly *Hymenoptera*—ants, also caterpillars, beetles, etc.

- (12) **Strickland's Chat.** *Enanthe opistholeuca* Strickland. (F. No. 508).
Abundance.—Not very common; only 4 birds killed on 4-1-1930 and 22, 28, 30-11-1929.
Food.—Insects—mainly *Hymenoptera*, e.g., ants, also beetles, etc.
- (13) **The Isabelline Chat.** *Enanthe isabellina* Cretzschm. (F. No. 512).
Abundance.—Rare: only 1 specimen killed on 28-8-1930.
Food.—Mainly insects.
- (14) **The Eastern Indian Redstart.** *Phœnicurus ochrurus rufiventris* Vieill. (F. No. 532).
Abundance.—A common bird, but only a winter visitor; 10 birds killed on 3, 6 (2)-1-1930, 26-1-1928, 9, 15-11-1930, 28-11-1929, 4-12-1930 and 6, 15-12-1929.
Food.—With the exception of one bird the stomach contents consisted of mainly insects—ants and other *Hymenoptera*, caterpillars, beetles, etc.
Status.—Of minor importance to agriculture: beneficial.
- (15) **The Western Red-spotted Blue-throat.** *Cyanosylvia succica succica* Linn. (F. No. 536).
Abundance.—Rare; only 1 specimen killed on 11-4-1928.
Food.—Mainly insects—ants, cutworms, caterpillars and beetles.
- (16) **The Brown-backed Indian Robin.** *Saxicoloides fulicata cambaiensis* Lath. (F. No. 557).
Abundance.—A common and most familiar bird; a permanent resident; 21 birds killed during all the different months of the year.
Food.—Various insects, mostly injurious—*Chrotogonus* spp., locust hoppers, white-ant workers, *Laphygma* sp. and other caterpillars, beetles, ants and other *Hymenoptera*.
Status.—Of major importance to agriculture: beneficial.
- (17) **The Black-throated Thrush.** *Turdus atrogularis* Temm. (F. No. 578).
Abundance.—A winter visitor; not very common; 7 birds killed on 20, 21, 25-1-1928, 21-2-1928, 28-2-1930 and 16, 18-3-1930.
Food.—Mainly insects—locust eggs and hoppers, cutworms and other caterpillars, beetles, etc.

Family: MUSCIPIDÆ.

- (18) **The Indian Paradise Flycatcher.** *Terpsiphone paradisi paradisi* Linn. (F. No. 688).
Abundance.—A pair was seen in the summer on 20-6-1928 and a male bird in winter on 25-11-1931.
Food.—Mainly insects.
- (19) **The White-browed Fantail Warbler.** *Rhipidura aureola aureola* Less. (F. No. 700).
Abundance.—Not very common, 6 birds were killed on 11-2-1928, 7-8-1929, 23-9-1928, 30-10-1930, and 18, 21-11-1929.
Food.—Mainly insects—*Chrotogonus* spp., ants and beetles.

Family: LANIIDÆ.

- (20) **The Indian Grey Shrike.** *Lanius excubitor lahtora* Sykes. (F. No. 706).
Abundance.—Very common; is seen sitting on trees looking for insects on wing or on ground; 13 birds were killed during different months.
Food.—Insects—*Chrotogonus* spp., locust adults and hoppers, black ants and other *Hymenoptera*, *Agrotis* caterpillars, beetles and bugs, etc.
Status.—Of major importance to agriculture: beneficial.
- (21) **The Bay-backed Shrike.** *Lanius vittatus* Valenc. (F. No. 710).
Abundance.—Common; 9 birds killed on 15, 20-3-1928, 5-4-1928, 22-5-1929, 3-7-1929, 17-8-1928, 26-11-1929, 14-12-1929 and 1-12-1930.
Food.—Insects—*Chrotogonus* spp., ants and other *Hymenoptera*, *Neuroptera*, cutworms and other caterpillars, beetles, etc.
Status.—Of major importance to agriculture: beneficial.
- (22) **The Rufous-backed Shrike.** *Lanius schach erythronotus* Vigors. (F. No. 714).

Abundance.—Common; 4 birds killed on 3-1-1930, 22-3-1930, 26-11-1929 and 23-12-1929.

Food.—Insects—locust hoppers, ants and other *Hymenoptera*, caterpillars, beetles, etc.

Status.—Of minor importance to agriculture: beneficial.

(23) **The Indian Common Wood-Shrike.** *Tephrodornis pondiceriana pondiceriana* Gmel. (F. No. 729).

Abundance.—Rare; only 1 specimen was killed on 29-11-1929.

Food.—Various insects—*Hymenoptera*, *Coleoptera*, etc.

Family: PERICROCOTIDÆ.

(24) **The Indian Short-billed Minivet.** *Pericrocotus brevirostris brevirostris* Vigors. (F. No. 738).

Abundance.—Not common; 6 birds killed on 8-1-1929, 17, 24-2-1928, 20-11-1929 (2) and 4-12-1928.

Food.—Buds of *kikar* (*Acacia arabica*), spiders, various insects—*Orthoptera*, ants and other *Hymenoptera*, caterpillars, beetles, flies, etc.

Family: DICURIDÆ.

(25) **The Black Drongo or King Crow.** *Dicrurus macrocercus macrocercus* Vieill. (F. No. 766).

Abundance.—Most familiar and common bird, found throughout the year; 21 birds killed during all the different months of the year. It is seen perching on telegraph wires, trees, poles, backs of cattle, watching for insects, or sitting on clouds in fields which are being irrigated, waiting for insects disturbed by water. It catches flying insects as well as those on the ground.

Food.—Insects—*Chrotogonus* spp., locust adults and hoppers, black ants, white-ants, moths, cutworms, *Laphygma* and other caterpillars, beetles, maggots, etc.

Status.—Very important bird to agriculture: positively beneficial.

Family: SYLVIIDÆ.

(26) **The Indian Tailor-Bird.** *Orthotomus sutorius sutorius* Forst. (F. No. 813).

Abundance.—Not common; 6 birds killed on 14-4-1928, 15-6-1926 (3), 27-7-1926 (2).

Food.—Insects such as flies, bees, etc.

(27) **The Rufous-fronted Wren-Warbler.** *Franklinia buchanani* Blyth. (F. No. 831).

Abundance.—Rare bird; only 2 killed on 7-8-1929 and 4-9-1929.

Food.—Mainly harmful insects.

(28) **The Brown Willow-Warbler.** *Phylloscopus collybitis tristis* Blyth. (F. No. 854).

Abundance.—A winter visitor; only 3 killed on 21-11-1929, 11-12-1929 and 11-12-1930.

Food.—Mainly harmful insects.

(29) **The Green Willow-Warbler.** *Acanthopneuste nitidus nitidus* Blyth. (F. No. 874).

Abundance.—A winter visitor; 3 birds killed on 2, 4-9-1929 and 17-12-1929.

Food.—Mainly insects—caterpillars, etc.

Family: ORIOLIDÆ.

(30) **The Indian Oriole.** *Oriolus oriolus kundoo* Sykes. (F. No. 953).

Abundance.—A rare bird, seen in pairs in gardens; 5 killed on 23-6-1926, 5, 15-7-1928, 26-7-1929 and 14-8-1931.

Food.—Ficus fruits and various insects—*Chrotogonus* spp. caterpillars, etc.

Family: STURNIDÆ.

(31) **The Rosy Pastor or Rose coloured Starling.** *Pastor roseus* Linn. (F. No. 972).

Abundance.—Appears in large flocks in the month of April and disappears in the same month, the nestlings visit again in July and remain here upto the first week of October; 76 birds killed during April, August and September.

Food.—Mostly mulberry fruits, ficus fruits, grains of chari (*Andropogon sorghum*) and other similar crops; and various harmful insects—*Chrotogonus* spp., locust adults and hoppers, gram caterpillars and cutworms, other caterpillars, beetles, weevil adults and grubs, dipterous pupæ, etc. It is a great enemy of locust.

Status.—Very beneficial particularly during the locust years.

(32) **The Himalayan Starling.** *Sturnus vulgaris humii* Brooks. (F. No. 973).

Abundance.—Remains in flocks throughout the winter; 89 birds killed from August to April.

Food.—Small quantities of grains, fruits; lizards and spiders; large numbers of harmful insects—*Chrotogonus* spp. all stages of locust, gram caterpillars and cutworms, beetles, weevil and grubs, maggots, and *Chrysopa* sp. pupæ. It is a great enemy of the gram caterpillars; one bird took 103 cutworms per meal. Practically all the birds killed had taken gram caterpillars and cutworms.

Status.—A most important bird to agriculture: beneficial.

(33) **The Common Myna.** *Acridotheres tristis tristis* Linn. (F. No. 996).

Abundance.—One of the most familiar and common bird; present in large numbers throughout the year; attends ploughing, hoeing, watering and other agricultural operations, picking up insects which are disturbed. It may be seen going round and peeping into bushes and plants for insects.

Food.—Ripening grains, seeds and seedlings, vegetables and various harmful insects—*Chrotogonus* spp., all stages of locust, ants, winged white-ants, adults of *Amsacta* sp., gram caterpillars, cutworms and other caterpillars, beetles, weevils and weevil grubs (*Hypera variabilis*), etc.

Examination of Stomach Contents.—Cropseeds 38.2 per cent; weedseeds 0.3 per cent; neutral seeds 0.1 per cent; vegetables 5.5 per cent; cultivated fruits 4.9 per cent; wild fruits 29.4 per cent; animal matter 0.7 per cent; injurious insects 20.1 per cent and pebbles 0.8 per cent.

Status.—Very important to agriculture: beneficial.

Family: PLOCEIDÆ.

(34) **The White-throated Munia.** *Uroloncha malabarica* Linn. (F. No. 1030).

Abundance.—Not very common; 4 birds killed on 20-1-1928, 31-3-1928, and 11, 28-11-1930. It is seen sitting on the top of *sarkanda* (*Saccharum spontaneum*), chari (*Andropogon sorghum*) and bajra (*Pennisetum typhoideum*) plants.

Food.—Grains, weedseeds, vegetable matter; and insects—ants, beetles, etc.

Status.—Of minor importance to agriculture: injurious.

Family: FRINGILLIDÆ.

(35) **The Yellow-throated Sparrow.** *Gymnoris xanthocollis xanthocollis* Burton (F. No. 1094).

Abundance.—Not very common; 6 birds killed on 16-2-1928, 4-4-1928 (2), 27-4-1931, 8-5-1928 and 27-8-1929.

Food.—Grains, weedseeds, vegetable matter; and insects—ants, beetles, etc.

(36) **The Indian House-Sparrow.** *Passer domesticus indicus* Jard. & Selby. (F. No. 1096).

Abundance.—A permanent resident, found in abundance throughout the year. Attacks in very large flocks the ripening cereals—wheat, chari (*Andropogon sorghum*), bajra (*Pennisetum typhoideum*), and rice (*Oryza sativa*) etc.; 262 birds killed throughout the different months of the year.

Food.—Ripening crops and fruits, tender shoots, flowers, vegetables, weedseeds; in the breeding season insects mostly caterpillars, also ants in small numbers, locust hoppers.

Examination of Stomach Contents.—Cropseeds 73.1 per cent; weedseeds 4.2 per cent; vegetables 0.4 per cent; insects 2.6 per cent; and pebbles 19.7 per cent.

Status.—A very important bird to agriculture: very injurious.

(37) The Red-headed Bunting. *Emberiza icterica* Eversm. (F. No. 1134).*Abundance.*—Not common; 2 birds killed on 11-4-1928 and 11-12-1930.*Food.*—Grains and seeds.

Family: HIRUNDINIDÆ.

(38) The Common Swallow. *Hirundo rustica rustica* Linn. (F. No. 1152).*Abundance.*—Rare; one bird killed on 25-12-1929.*Food.*—Insects.**(39) The Indian Wire-tailed Swallow.** *Hirundo smithii filifera* Stephens. (F. No. 1157).*Abundance.*—Rare bird; was seen on 27-7-1931.*Food.*—Insects.

Family: MOTACILLIDÆ.

(40) The Indian White Wagtail. *Motacilla alba dukhunensis* Sykes. (F. No. 1166).*Abundance.*—Common and remains from September to first week of May; 21 birds killed on 2, 18, 22-1-1928, 2-5-1928, 18 (2), 19-10-1928, 5, 8, 13, 19-11-1928, 21-11-1929, 19, 25, 26, 29-11-1930 and 14, 16-12-1929.*Food.*—Mostly insects—*Chrotogonus* spp., ants and other *Hymenoptera*, gram caterpillars, cutworms and other caterpillars, adults and grubs of *Hypera variabilis*. Few birds took grass seeds, grains and weedseeds.*Status.*—Of major importance to agriculture: beneficial.**(41) The Indian Pipit.** *Anthus richardi rufulus* Vieill. (F. No. 1195).*Abundance.*—Not very common; 5 birds killed on 20, 27-3-1928, 26-3-1930, 5-4-1928 and 23-12-1929.*Food.*—Mainly insects—Orthoptera, locust hoppers, Vespidae, gram caterpillars and cutworms, beetles, weevils and dipterous pupæ.*Status.*—Of some importance to agriculture: beneficial.

Family: ALAUDIDÆ.

(42) Franklin's Crested Lark. *Galerida cristata chendoola* Franklin. (F. No. 1237).*Abundance.*—Not very common; 5 birds killed on 20, 27-3-1928, 26-3-1930, 17-11-1930, 7-12-1928 and 20-12-1929.*Food.*—Grains, weedseeds and insects—locust hoppers, ants, cutworms, etc.**(43) The Ashy-Crowned Finch-Lark.** *Pyrrhulauda grisea* Scop. (F. No. 1245).*Abundance.*—Rare; one bird killed on 25-8-1931.*Food.*—Omnivorous, feeds mostly on grains.

Family: NECTARINIDÆ.

(44) The Indian Purple Sunbird. *Leptocoma asiatica asiatica* Lath. (F. No. 1278).*Abundance.*—A summer visitor, commonly seen on flowers; 6 birds killed on 29-3-1928 (2), 19-4-1928 and 5, 24, 28-5-1928.*Food.*—Mostly honey and insects, also spiders.

Family: PICIDÆ.

(45) The Northern Golden-backed Woodpecker. *Brachypternus benghalensis benghalensis* Linn. (F. No. 1394).*Abundance.*—A familiar bird, commonly seen climbing on trees; 12 birds killed on 10, 12-3-1928, 10-4-1930, 14, 28-6-1926, 12-7-1928, 19-8-1926 (2), 1-8-1928, 26, 27-11-1929 and 10-12-1928.*Food.*—Insects—mostly black ants, *Chrotogonus* spp., grasshoppers, caterpillars, moths, beetles, bugs, etc.*Status.*—Of major importance to agriculture: beneficial.**(46) The European Wryneck.** *Iynx torquilla torquilla* Linn. (F. No. 1423).*Abundance.*—Rare; only 1 bird was killed on 26-8-1929.*Food.*—Insects.

Family: CUCULIDÆ.

(47) **The Common Hawk-Cuckoo.** *Hierococcyx varius* Vahl. (F. No. 1458).
Abundance.—Rare; only 3 birds were shot on 9-4-1928, 24-4-1930 and 8-7-1928.

Food.—Insects, many harmful species such as locust hoppers, grasshoppers, winged white-ants, enormous quantity of cutworms, other caterpillars, etc.

(48) **The Pied Crested Cuckoo.** *Clamator jacobinus jacobinus* Bodd. (F. No. 1472).

Abundance.—Rare; only 3 birds killed on 27-6-1929, 1-7-1928 and 22-8-1929.

Food.—Grasshoppers, winged white-ants and other insects.

(49) **The Indian Koel.** *Eudynamis scolopaceus scolopaceus* Linn. (F. No. 1475).

Abundance.—Arrives in the first week of March and remains upto early October; 7 birds killed on 17, 18, 25, 30-6-1926, 24-7-1926, 6-7-1928 and 9-8-1926.

Food.—Mostly ficus fruits and sometimes *Ber* (*Zizyphus jujuba*) and other fruits.

Status.—Of some importance as an enemy of crow's eggs.

(50) **The Common Crow Pheasant or Coual.** *Centropus sinensis sinensis* Stephen. (F. No. 1490).

Abundance.—Not very common; lives in clumps of bamboos and in thick sugar-cane fields; 4 birds killed on 27-3-1928, 30-5-1929 and 30-6-1926 (2).

Food.—Mainly insects, including some noxious species—*Chrotogonus* spp., *Hymenoptera*, gram caterpillars, cutworms, maggots, etc.; also lizards, snakes, mice, bats and eggs of birds.

Status.—Of minor importance to agriculture: beneficial.

Family: PSITTACIDÆ.

(51) **The Large Indian Paroquet.** *Psittacula eupatria nepalensis* Hodgs. (F. No. 1497).

Abundance.—A very common bird, moves about in large parties towards cultivated area in the morning; returns before noon: again leaves in the afternoon and returns in the evening to spend the night at the roosting place.

Food.—A gregarious feeder; attacks various ripening crops specially wheat, maize, chari (*Andropogon sorghum*), toria (*Brassica campestris*), paddy (*Oryza sativa*) etc. and also attacks all kinds of fruits particularly citrus, guavas, figs, etc. It also takes vegetables and weedseeds. Its feeding habits are extremely wasteful as it cuts off much more than it can consume.

Examination of Stomach Contents.—Cropseeds 52 per cent, weedseeds 2.7 per cent; neutral seeds 11.4 per cent, vegetables 4.8 per cent, cultivated fruits 19.3 per cent; wild fruits 9.791 per cent and pebbles 0.009 per cent.

Status.—Of great importance to agriculture and horticulture: extremely harmful.

(52) **The Rose-ringed Paroquet.** *Psittacula krameri manillensis* Bechst. (F. No. 1500).

Abundance.—Same as above.

Food.—Same as above.

Status.—Of great importance to agriculture: extremely harmful.

Family: CORACIDÆ.

(53) **The Indian Roller** *Coracias benghalensis benghalensis* Linn. (F. No. 1517).

Abundance.—Very common throughout the year; 19 birds killed during different months. It is seen perching on trees, telegraph wires, poles, and sometimes on the backs of cattle, and dashes for insects in air or on ground, picks up its victim and returns to the perch to eat.

Food.—Insects—*Chrotogonus* spp., crickets, locust adults and hoppers, enormous number of winged white-ants, black ants and other *Hymenoptera*, beetles; also lizards, frogs and mice.

Status.—Very important to agriculture: beneficial.

Family: MEROPIDÆ.

(54) **The Common Indian Bee-eater.** *Merops orientalis orientalis* Lath. (F. No. 1523).

Abundance.—A common bird, arrives in the last week of February and remains here for breeding uptill October; 9 birds killed on 22, 24-2-1928, 8, 27-5-1928, 14, 15-6-1926, 16-6-1931, 6-9-1929 and 7-9-1931.

Food.—Mainly insects—ants, bees, other *Hymenoptera*, dragon flies, moths, beetles, etc.

(55) **The Blue-tailed Bee-eater.** *Merops superciliosus javanicus* Horsf. (F. No. 1526).

Abundance.—Not very common; only 2 birds were killed on 14-7-1931 (2).

Food.—Dragon flies and some other insects.

Family: ALCEDINIDÆ.

(56) **The White-breasted Kingfisher.** *Halcyon smyrnensis smyrnensis* Linn. (F. No. 1550).

Abundance.—Common throughout the year; 17 birds killed during different months.

Food.—Insects—*Chrotogonus* spp., grasshoppers, gryllids, caterpillars, beetles, aquatic bugs, etc.

Status.—Of minor importance to agriculture: beneficial.

Family: UPUPIDÆ.

(57) **The Indian Hoopoe.** *Upupa epops orientalis* Stuart Baker. (F. No. 581).

Abundance.—Common and is generally seen throughout the year haunting grassy and cultivated fields; 21 birds killed during different months.

Food.—Mainly insects—*Forficulidæ*, *Chrotogonus* spp., locust hoppers, ants, gram caterpillars, cutworms and other caterpillars, beetles and beetle grubs, etc.

Status.—Of major importance to agriculture: beneficial.

Family: TYTONIDÆ.

(58) **The Indian Barn-Owl.** *Tyto alba javanica* Gmelin. (F. No. 1636).

Abundance.—Not very common; only 3 birds killed on 9-4-1928, 26-4-1929, and 3-6-1926.

Food.—Mice and insects.

Status.—Of minor importance to agriculture: beneficial.

Family: ASIONIDÆ.

(59) **The Central Indian Collared Scops-Owl.** *Otus bakkamana maratha* Ticehurst. (F. No. 1667).

Abundance.—Rare; only 2 birds killed on 11-5-1931 (2).

Food.—Mice; beetles and other insects.

(60) **The Northern Spotted Owllet.** *Athene brama indica* Frankl. (F. No. 1684).

Abundance.—Common throughout the year; 25 birds killed during different months.

Food.—Insects—*Chrotogonus* spp., gryllids, locust adults and hoppers, winged white-ants, ants, caterpillars, moths, beetles, maggots, etc. Its favourite food is beetles and it also takes mice.

Status.—Of major importance to agriculture: beneficial.

Family: ÆGYPTIDÆ.

(61) **The Cinereous Vulture.** *Ægyptius monachus* Linn. (F. No. 1705).

Abundance.—Common throughout the year; one was killed on 26-3-1928.

Food.—Flesh of carrion.

Status.—Scavenger.

(62) **The Himalayan Griffon.** *Gyps himalayensis* Hume. (F. No. 1709).

Abundance.—Not common; only 1 was killed on 9-1-1930.

Food.—Carrion; dung; and insects such as locust hoppers.

Status.—Scavenger.

Family: FALCONIDÆ.

- (63) **The Laggar Falcon.** *Falco jugger* Gray. (F. No. 1721).
Abundance.—Rare; only 3 birds killed on 5-1-1929, 29-3-1928, and 11-4-1929.
Food.—Pigeons and other birds; locust and other insects.
Status.—Enemy of birds.
- (64) **The Red-headed Merlin.** *Falco chiquera chiquera* Dauden. (F. No. 1730).
Abundance.—Rare; only 2 specimens killed on 4-1-1929 and 16-3-1928.
Food.—Birds; locusts, other insects.
Status.—Enemy of birds.
- (65) **The Eastern Steppe-Eagle.** *Aquila nipalensis nipalensis* Hodgs. (F. No. 1748).
Abundance.—Rare; only 1 specimen was killed on 9-1-1929.
Food.—Small mammals, birds and reptiles.
- (66) **The White-eyed Buzzard-Eagle.** *Butastur tessa* Frankl. (F. No. 1774).
Abundance.—Not very common; only 3 birds killed on 26-3-1928, 4-5-1928 and 14-6-1929.
Food.—Mice; various harmful insects—*Chrotogonus* spp., rice grasshopper, gryllids, caterpillars, beetles, etc.
Status.—Of minor importance to agriculture.
- (67) **The Common Pariah Kite.** *Milvus migrans govinda* Sykes. (F. No. 1787).
Abundance.—Very common throughout the year; 3 birds killed on 4-1-1929, 15-3-1930 and 15-4-1930.
Food.—Kitchen and animal refuse, mice, lizards, small birds, chickens; various insects such as locust adults and hoppers.
Status.—Of major importance to agriculture: injurious to poultry.
- (68) **The Indian Shikra.** *Astur badius dussumieri* Temm. (F. No. 1803).
Abundance.—Not very common; 6 birds killed on 28-4-1930, 26-6-1926, 30-7-1926, 2, 9-8-1926 and 10-11-1926.
Food.—Pigeons and other birds, mice, rats, lizards; and insects such as mantids, locust hoppers and adults, grasshoppers, winged white ants, etc.
- (69) **The Northern Besra Sparrow-Hawk.** *Accipiter virgatus affinis* Hodgs. (F. No. 1814).
Abundance.—Not very common; 3 birds killed on 14-1-1929, 19-3-1930 and 28-4-1930.
Food.—Birds, lizards and insects such as locust.

Family: COLUMBIDÆ.

- (70) **The Bengal Green Pigeon.** *Crocopus phænicopterus phænicopterus* Lath. (F. No. 1826).
Abundance.—Rare bird; only a few birds were seen in King's garden on 10-9-1931, but could not be killed.
Food.—Mostly ficus fruits.
- (71) **The Indian Blue Rock-Pigeon.** *Columba livia intermedia* Strick. (F. No. 1856).
Abundance.—A very common bird, congregates in very large flocks and roosts in buildings—dwelling houses, mosques, temples and offices; leaves roosting places in the morning and returns before noon and again leaves in the afternoon and returns in the evening. On its return it visits tanks to drink water.
Food.—Takes food as gleanings, picks up seeds of crops especially wheat and maize, germinating crops, weedseeds and pebbles.
Examination of Stomach Contents.—Cropseeds 66.15 per cent; weedseeds 30 per cent and pebbles 3.85 per cent.
Status.—Of major importance to agriculture: very injurious.
- (72) **The Indian Spotted Dove.** *Streptopelia chinensis suratensis* Gmel. (F. No. 1873).
Abundance.—A rare bird; two pairs seen since 1926 and 1 bird killed on 20-1-1929.
Food.—Grains, weedseeds and fruits.

(73) **The Indian Little Brown Dove.** *Streptopelia senegalensis cambaiensis* Gmelin. (F. No. 1877).

Abundance.—Common, found throughout the year; 14 birds killed during different months.

Food.—Grains, weedseeds, seeds sown, germinating crops and pebbles.

Status.—Of minor importance to agriculture: injurious.

(74) **The Indian Ring-Dove.** *Streptopelia decaocta decaocta* Frivaldszky. (F. No. 1879).

Abundance.—Very common throughout the year. At the time of thrashing of toria (*Brassica campestris*) seen in abundance in such fields.

Food.—Grains as gleanings, seeds sown and germinating crops, pebbles. Only two or three birds took one insect each.

Examination of Stomach Contents.—Cropseeds 64.97 per cent; weedseeds 30.58 per cent; vegetable matter 1.18 per cent; insects 0.06 per cent and pebbles 3.21 per cent.

Status.—Of major importance to agriculture: injurious.

(75) **The Indian Red Turtle-Dove.** *Eupopelia tranquebarica tranquebarica* Henry. (F. No. 1881).

Abundance.—A summer visitor; 6 birds killed on 7-5-1931 (2), 16-6-1931, 19-8-1928 (2) and 8-8-1929.

Food.—Same as above.

Status.—Of minor importance to agriculture: injurious.

Family: PTEROCLIDÆ.

(76) **The Common Indian Sand-Grouse.** *Pterocles exustus erlangeri* Neum. (F. No. 1893).

Abundance.—A rare bird; a few were seen on barren land near Narwala in August, 1929.

Food.—Guara (*Cyamopsis psoralioides*) seeds and other grains.

Family: PHASIANIDÆ.

(77) **The Common Peafowl.** *Pavo cristatus* Linn. (F. No. 1897).

Abundance.—Introduced; eggs brought from Hoshiarpur; only 1 or 2 birds seen in the King's garden.

Food.—Grains, vegetables, fruits; insects such as locust hoppers, caterpillars, beetles, etc.; also takes frogs, lizards and snakes.

(78) **The Common or Grey Quail.** *Coturnix coturnix coturnix* Linn. (F. No. 1950).

Abundance.—Visits in very large numbers in April and August to September; 16 birds killed on 14-3-1927 (2), 14-4-1928, 3-9-1929 (3) and 11 (5), 13 (5), 9-1931.

Food.—Grains, weedseeds, insects—ants, caterpillars, *Hypera variabilis* grubs, beetles, aphids, etc.

(79) **The Northern Chukar.** *Alectoris græca pallescens* Hume. (F. No. 1974).

Abundance.—Not found in open country, but kept as a cage bird.

Food.—Omnivorous.

(80) **The Indian Black Partridge.** *Francolinus francolinus asia* Bonap. (F. No. 1976).

Abundance.—Not found in the open country, but is a favourite cage bird.

Food.—Grains, weedseeds; and various insects such as locust hoppers, etc.

(81) **The Northern Grey Partridge.** *Francolinus pondicerianus interpositus* Hartert. (F. No. 1984).

Abundance.—Rare; 10 birds killed on 27-3-1930, 2-4-1930 (2), 12, 26-6-1926 and 4 (2), 17, 21, 24-7-1928.

Food.—Grains, seeds, weedseeds, vegetable matter; and insects—locust hoppers, ants, winged white-ants and workers, beetle grubs, etc.

Status.—Of major importance to agriculture: beneficial.

Family: TURNICIDÆ.

(82) **The Little Button-Quail.** *Turnix dussumieri* Temm. (F. No. 2003).

Abundance.—Rare; only 1 bird was shot on 14-4-1928.

Food.—Grains, weedseeds and insects,

Family: RALLIDÆ.

(83) **The Coot.** *Fulica atra atra* Linn. (F. No. 2029).*Abundance.*—Rare; only 1 specimen was shot on 16-2-1928.*Food.*—Germinating crops and insects.

Family: GLAREOLIDÆ.

(84) **The Cream-Coloured Courser.** *Cursorius cursor cursor* Latham. (F. No. 2051).*Abundance.*—Rare; 6 specimens shot on 13-2-1930 and 4 (2), 8 (3)-12-1929.*Food.*—Ants and other *Hymenoptera*, gram caterpillars and other caterpillars, beetles, etc.

Family: STERNIDÆ.

(85) **The Gull-billed Tern.** *Gelochelidon nilotica nilotica* Gmelin. (F. No. 2072).*Abundance.*—Rare; 2 specimens killed on 11-8-1931 (2).*Food.*—Frogs, *Crustacea* and insects.

Family: CHARADRIIDÆ.

(86) **The Chinese Little Ringed Plover.** *Charadrius dubius dubius* Scop. (F. No. 2113).*Abundance.*—Rare; 2 birds killed on 19-3-1930 (2).*Food.*—Insects—*Chrotogonus* spp., *Hypera variabilis* grubs, beetles, etc.(87) **The Indian Red-wattled Lapwing.** *Lobivanellus indicus indicus* Bodd. (F. No. 2125).*Abundance.*—Not common, although a permanent resident; 6 birds killed on 11-1-1928, 15-3-1928, 13-8-1928 (2), 27-10-1926 and 8-12-1928.*Food.*—Insects—ants, caterpillars, beetles, etc. Two birds took green vegetable matter.(88) **The Yellow-wattled Lapwing.** *Lobipluvya malabarica* Bodd. (F. No. 2128).*Abundance.*—Rare and was seen in August, 1928.*Food.*—Insects.

Family: SCOLOPACIDÆ.

(89) **The Green Sandpiper.** *Tringa ochrophus* Linn. (F. No. 2143).*Abundance.*—Not very common, is seen near tanks; 7 birds killed on 7 (2) 19 (2)-8-1926, 28, 29-8-1928 and 5-11-1926.*Food.*—Mosquitoe larvae and other un-identifiable insects.(90) **The Ruff and Reeve.** *Philomachus pugnax* Linn. (F. No. 2152).*Abundance.*—A rare bird; only 3 specimens killed on 13-8-1928 (2) and 29-11-1929.*Food.*—Insects—*Hymenoptera* beetles and mosquitoe larvae and pupae, etc.

Family: ARDEIDÆ.

(91) **The Cattle Egret.** *Bubulcus ibis coromandus* Bodd. (F. No. 2226).*Abundance.*—Rare bird, was seen in flocks twice or thrice attending cattle; 4 birds killed on 29-7-1928 (2) and 7-9-1929 (2).*Food.*—Insects—*Chrotogonus* spp., grasshoppers, beetles, etc. Two birds took lizards and one bird took one frog.*Status.*—Of minor importance to agriculture: beneficial.(92) **The Indian Pond-Heron.** *Ardeola grayii* Sykes. (F. No. 2229).*Abundance.*—Common near ponds and watered fields, permanent resident; 8 birds killed on 13-1-1928, 10, 16-2-1928, 19-6-1926, 7-8-1926, 18-8-1931, 16-10-1928 and 7-11-1930.*Food.*—Insects—*Chrotogonus* spp., grasshoppers, crickets, earwigs, *Hymenoptera* (e.g., ants), caterpillars, beetles, etc.; and also took spider, fish and frog.(93) **The Night Heron.** *Nycticorax nycticorax nycticorax* Linn. (F. No. 2233).*Abundance.*—Rare; only 1 specimen was shot on 29-8-1929.*Food.*—Fish, frogs, *Crustacea* and insects.